

WHAT IS CLAIMED IS:

1. An imaging system comprising:

a radiation source configured to generate a beam;

a collimator configured to collimate the beam to generate a collimated beam; and

a detector configured to detect the collimated beam, wherein the collimator is one of:

a first collimator with a curved contour proportional to a contour of the detector;

a second collimator with blades, wherein slopes of two oppositely-facing surfaces of at least one of said blades are different from each other; and

a third collimator having at least two sets of plates, wherein said plates in a set pivot with respect to each other.
2. An imaging system in accordance with Claim 1 wherein said curved contour of said first collimator and said contour of said detector are concentric.
3. An imaging system in accordance with Claim 1 further comprising:

a linear drive mechanism configured to form an aperture of said first collimator, wherein the aperture has a size; and

a piezo-electric drive mechanism configured to change the size of the aperture of said first collimator.
4. An imaging system in accordance with Claim 1 wherein said blades of said second collimator are configured to form an aperture having one of a

first size, a second size, and a third size, wherein the first size is greater than the second size and the second size is greater than the third size.

5. An imaging system in accordance with Claim 4 wherein said blades of said second collimator include outer surfaces tapered to form the aperture of the second size.

6. An imaging system in accordance with Claim 4 wherein said blades of said second collimator include inner surfaces tapered to form the aperture of the first size.

7. An imaging system in accordance with Claim 1 wherein at least one of said blades of said second collimator include a slit.

8. An imaging system in accordance with Claim 1 wherein said plates in each set pivot about a pivot point and wherein each set of plates is configured to be driven by applying a force at said pivot point to change a width of an aperture formed between said sets.

9. An imaging system in accordance with Claim 1 wherein each set of plates is configured to be driven by applying a force at edges of each set to change a slope of an aperture formed between said sets.

10. An imaging system in accordance with Claim 1 wherein said collimator is located between a subject and said radiation source.

11. A computed tomography imaging system comprising:

an x-ray source configured to generate a beam;

a collimator configured to collimate the x-ray beam to generate a collimated x-ray beam; and

a detector configured to detect the collimated x-ray beam, wherein the collimator is one of:

a first collimator with a curved contour proportional to a contour of the detector;

a second collimator with blades, wherein slopes of two oppositely-facing surfaces of at least one of said blades are different from each other; and

a third collimator having at least two sets of plates, wherein said plates in a set pivot with respect to each other.

12. A computed tomography imaging system in accordance with Claim 11 wherein said curved contour of said first collimator and said contour of said detector are concentric.

13. A computed tomography imaging system in accordance with Claim 11 further comprising:

a linear drive mechanism configured to form an aperture of said first collimator, wherein said aperture has a size; and

a piezo-electric drive mechanism configured to change the size of said aperture of said first collimator.

14. A computed tomography imaging system in accordance with Claim 11 wherein said blades of said second collimator are configured to form an aperture having one of a first size, a second size, and a third size, wherein the first size is greater than the second size and the second size is greater than the third size.

15. A computed tomography imaging system in accordance with Claim 14 wherein said blades of said second collimator include outer surfaces tapered to form the aperture of the second size.

16. A computed tomography imaging system in accordance with Claim 14 wherein said blades of said second collimator include inner surfaces tapered to form the aperture of the first size.

17. A computed tomography imaging system in accordance with Claim 11 wherein at least one of said blades of said second collimator include a slit.

18. A computed tomography imaging system in accordance with Claim 11 wherein said plates in each set pivot about a pivot point and wherein each set of plates is configured to be driven by applying a force at said pivot point to change a width of an aperture formed between said sets.

19. A computed tomography imaging system in accordance with Claim 11 wherein each set of plates is configured to be driven by applying a force at edges of each set to change a slope of an aperture formed between said sets.

20. A method for reducing dosage of radiation incident on a subject, said method comprising:

transmitting a beam of radiation toward the subject;

collimating the beam of radiation before the beam reaches the subject;

and

detecting the collimated beam of radiation, wherein the collimating is performed by one of:

a first collimator with a curved contour proportional to a contour of a detector that detects the collimated beam;

a second collimator with blades, wherein slopes of two oppositely-facing surfaces of at least one of said blades are different from each other; and

a third collimator having at least two sets of plates, wherein said plates in a set pivot with respect to each other.